

## Silver Ion Biocide Delivery System for Water Disinfection, Phase II

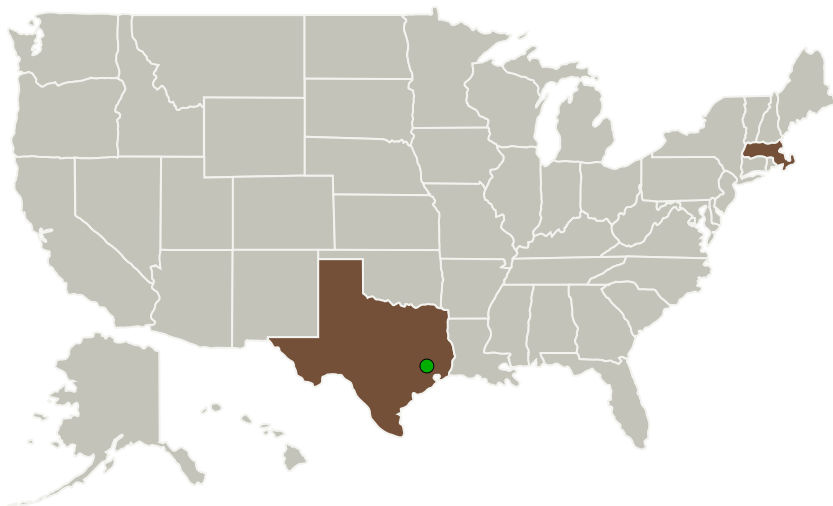
Completed Technology Project (2014 - 2016)



## Project Introduction

U.S. space exploration missions have long considered returning to the Moon and exploration of Mars that challenge life support systems. For these long duration missions, NASA is interested in replacing the iodine water treatment system with ionic silver. Although iodine treated water has been used successfully with the International Space Station, its use requires that the iodine be removed before being consumed by astronauts due to its adverse effects on the thyroid. For long duration exploration missions, minimal mass systems are desired that lessen logistical supply requirements for storing and distributing potable water. In particular, it is imperative that an effective biocide is used that prevents microbial growth, biofilm formation, and microbially induced corrosion in the water storage and distribution systems. To address these needs, Reactive Innovations, LLC successfully demonstrated a Phase I program that developed an electrochemical silver ion generator to produce an effective biocide solution for disinfecting water throughout the water storage and distribution system. A follow-on Phase II program will further develop and optimize this cell and control system. This biocide delivery system will be demonstrated in a relevant environment showing its long life performance for preventing biofilm growth.

## Primary U.S. Work Locations and Key Partners



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Organizations Performing Work	Role	Type	Location
Reactive Innovations, LLC	Lead Organization	Industry	Westford, Massachusetts
● Johnson Space Center(JSC)	Supporting Organization	NASA Center	Houston, Texas

Primary U.S. Work Locations	
Massachusetts	Texas

## Project Transitions

▶ **April 2014:** Project Start

✓ **April 2016:** Closed out

**Closeout Summary:** Silver Ion Biocide Delivery System for Water Disinfection, Phase II Project Image

**Closeout Documentation:**

- Final Summary Chart Image(<https://techport.nasa.gov/file/137636>)

## Images



**Briefing Chart Image**

Silver Ion Biocide Delivery System for Water Disinfection, Phase II (<https://techport.nasa.gov/image/131175>)



**Final Summary Chart Image**

Silver Ion Biocide Delivery System for Water Disinfection, Phase II Project Image (<https://techport.nasa.gov/image/130110>)

## Organizational Responsibility

**Responsible Mission Directorate:**

Space Technology Mission Directorate (STMD)

**Lead Organization:**

Reactive Innovations, LLC

**Responsible Program:**

Small Business Innovation Research/Small Business Tech Transfer

## Project Management

**Program Director:**

Jason L Kessler

**Program Manager:**

Carlos Torrez

**Principal Investigator:**

Michael C Kimble

**Co-Investigator:**

Michael C Kimble

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### Technology Maturity (TRL)

Start: **3**  
Current: **5**  
Estimated End: **5**



### Technology Areas

#### Primary:

- TX06 Human Health, Life Support, and Habitation Systems
  - └ TX06.1 Environmental Control & Life Support Systems (ECLSS) and Habitation Systems
    - └ TX06.1.2 Water Recovery and Management

### Target Destinations

Earth, The Moon, Others Inside the Solar System, Outside the Solar System, The Sun, Mars